## **EUROPEAN PATENT OFFICE**

(a)

(b)

## **Patent Abstracts of Japan**

**PUBLICATION NUMBER** 

2001118500

**PUBLICATION DATE** 

27-04-01

**APPLICATION DATE** 

18-10-99

APPLICATION NUMBER

11295949

APPLICANT: MATSUSHITA ELECTRIC WORKS LTD;

INVENTOR: AIZAWA KOICHI;

INT.CL.

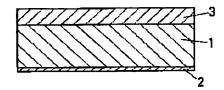
: H01J 9/02 H01J 1/312 H01J 1/30

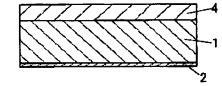
TITLE

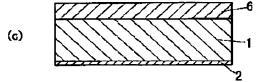
**ELECTRIC FIELD RADIATION** 

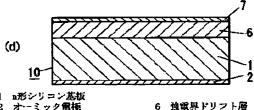
**ELECTRON SOURCE AND METHOD** 

FOR FABRICATING









表面電極

電界放射型電子源

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a method for fabricating an electric field radiation electron source with improved withstand voltage and electron emission efficiency.

SOLUTION: A strong electric field drift layer 6 made of an oxidized porous polycrystalline silicon layer is deposited on the main surface of a conductive n-type silicon substrate 1, having a surface electrode 7 formed thereon. An ohmic electrode 2 is formed in the inside of the n-type silicon substrate 1. The drift layer 6 is obtained by oxidizing the porous polycrystalline silicon layer 4 formed by oxidizing the polycrystalline silicon layer 3 with the anode. A lamp annealing apparatus is used for the oxidizing process, maintained under a vacuum during the period of temperature rise from room temperature to oxidation temperature, for example, 900°C, at which temperature the furnace is charged with oxygen to initiate oxidation process.

COPYRIGHT: (C)2001, JPO